source. However, fused edges or extended borders may tend to reduce elasticity in those areas relative to the remainder of the wiper. Thus, upon a stretching of the wiper, the fused edges or extended borders may tend to undergo premature localized fracture thereby releasing potentially undesired particulate matter.

According to a first embodiment of the present invention as illustrated in FIG. 1, a wiper 10 formed of knitted polyester yarns is provided. While a knitted construction of substantially 100% polyester may be preferred, it is also contemplated that other constructions including woven and nonwoven constructions and other fibers including nylon and the like may also be utilized if desired.

As shown, the wiper 10 includes an interior wiping surface 12 and a multiplicity of perimeter edges. In the illustrated and potentially preferred embodiment the wiper 10 is of a substantially quadrilateral geometry such that the wiper 10 includes a first perimeter edge 14 and an opposing second perimeter edge 16 as well as a third perimeter edge 18 and a fourth perimeter edge 20 extending in a generally right angled relation between the first perimeter edge 14 and the second perimeter edge 16. While the wiper 10 is illustrated as being substantially square in configuration, it is likewise to be understood that the wiper 10 may take on any number of other geometries including by way of example only, and not limitation, a rectangular configuration or some other convenient multi-sided configuration such as a triangular, pentagonal, hexagonal, or octagonal geometry as may be desired.

As will be appreciated, the wiper 10 is cut from a much larger web of fabric having an extended length and a width sufficient to yield multiple wipers. According to a potentially preferred practice, the wiper 10 is cut from such larger web of fabric according to a pattern such that the first and second perimeter edges 14, 16 extend in the so called "cross-machine direction" disposed substantially transverse to the elongate direction of the fabric web. Correspondingly, the third and fourth perimeter edges 18, 20 are preferably cut substantially along the so-called "machine direction" of the fabric generally parallel to the elongate direction of the fabric web.

As illustrated, the first perimeter edge 14 and the second perimeter edge 16 extending in the cross-machine direction are each preferably provided along their length with a sealed edge 24, 26 formed by a hot knife or laser cutting operation so as to seal the fibers along the raw cut edge of the wiper 10. In addition, the first and second perimeter edges 14, 16 are each preferably provided with an inwardly extending discontinuous fused border 28, 30 extending inwardly from the adjacent sealed edges 24, 26 towards the interior wiping surface 12. As shown, the discontinuous fused borders 28, 30 are preferably made up of a multiplicity of discrete bond points 34, 36 at which thermoplastic fibers such as polyester forming the wiper 10 have undergone localized melting thereby fusing together upon resolidification.

It is contemplated that the bond points 34, 36 extending in the cross-machine direction may be applied in a predefined repeating pattern utilizing a patterned embossing element such as an ultrasonic horn operating on one side of the fabric forming the wiper 10 in opposing relation to a surface

patterned anvil disposed on the opposite side of the fabric forming the wiper 10 within a width corresponding to the desired width for the inwardly extending discontinuous fused borders 28, 30. Of course, other patterned fusion techniques may also be utilized such as using a patterned support on one side of the fabric and applying a hot ironing element across the opposing side so as to apply the series of bond points 34, 36.

According to the illustrated and potentially preferred practice, the discontinuous fused borders 28, 30 extending in the cross-machine direction preferably have a relatively narrow width in the range of about 0.3 mm to about 1.6 mm and will most preferably have a width in the range of about 1.0mm to about 1.4 mm although greater or lesser depths may likewise be utilized if desired. As shown, according to one embodiment, the bond points 34, 36 may be substantially rectangular in configuration arranged in a brick-like pattern within the discontinuous fused borders 28, 30 such that the length dimension of the bond points 34, 36 extends generally parallel to the outer sealed edges 24, 26. Of course, it is contemplated that any number of other geometric arrangements may be likewise be utilized including, by way of example only, and not limitation, discrete substantially circular bond points, elongate elliptical bond points, square bond points, and other geometries. Moreover, due to their discontinuous nature, the bond points may also be arranged in a pattern in the form of a message conveying icon such as a corporate logo, patent number or the like. According to the illustrated practice wherein the bond points are substantially rectangular in configuration, the rectangles forming the bond points are preferably in the range of about 0.75